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*Our Winter Birds in their
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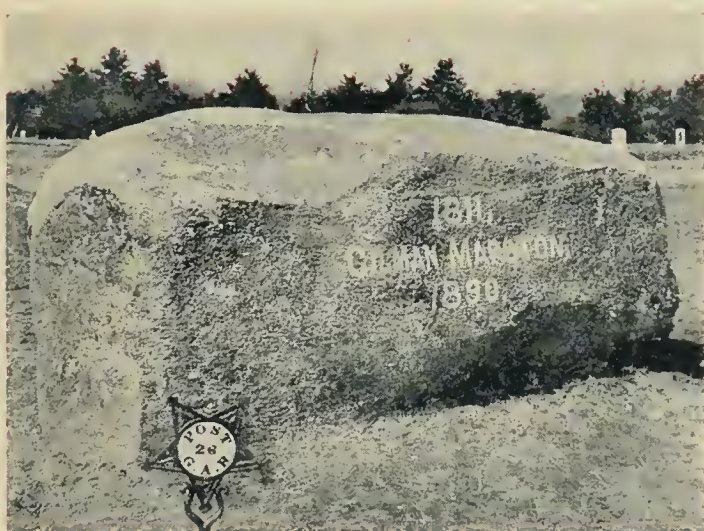
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See poem, page 75.

THE MARSTON BOULDER.

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OUR WINTER BIRDS IN THEIR FOOD RELATIONS.

By Clarence Moores Weed.

It is only the birds of exceptional feeding habits that can endure the conditions of our northern winters. For a large part of the time from November until April, practically all of the summer sources of the food supply of birds is shut off, and the existence of the winter resident becomes a question of adaptation to a limited and special diet. So it happens that if you analyze the chief food sources of our winter birds you will find that each species or group of species depends upon some chief specialty in the way of food. Some search out the winter stages of insects in their hidden quarters; others depend upon the seeds of herbaceous plants, perhaps projecting above the snow; others find nutriment in the buds of trees; while the shrikes, hawks, and owls sustain themselves largely upon their fellow residents of the feathered world, as well as upon mice and related rodents.

In these pages I have brought together a summary of the scattered information that has been published regarding the feeding habits of our common winter residents, omitting, however, the hawks and owls.

In the family *Fringillidæ*, which includes the finches and sparrows, are found several birds that stay with us more or less in winter. The first on the list is the pine grosbeak—a

northern form which ranges southward through the New England and other states in winter. Small flocks are to be seen occasionally; they spend much of their time in coniferous forests, feeding upon the buds of pine and spruce. They also eat the seeds and buds of white ash, basswood, alder, birch, apple, pear, and poplar, as well as the berries of the red cedar and the high bush cranberry. In winter they often subsist largely upon the pulp and seeds of frozen apples. Sometimes, though rarely, they have been known to injure fruit orchards by feeding upon the buds.

The purple finch is a handsome and somewhat familiar bird, found throughout nearly all the United States. It is migratory and usually goes in flocks, except during the breeding season. Unfortunately the feeding habits of this species are not all that could be desired. Years ago Wilson wrote of it: "This is a winter bird of passage, coming to us in large flocks from the north in September and October; great numbers remaining with us in Pennsylvania during the whole winter, feeding on the seeds of the poplar, buttonwood, juniper, cedar, and on those of many rank weeds that flourish in rich bottoms and along the margins of creeks. In April they frequent the elm trees, feeding on the slender but sweet covering of

the flowers; and as soon as the cherries put out their blossoms they feed almost exclusively upon the stamens of the flowers; afterwards the apple blossoms are attacked in the same manner; and their depredations on these continue until they disappear which is usually about the tenth or middle of May." Many later observers have seen the purple finches eating the tender portions of the buds and blossoms of apple, cherry, plum, and peach, but as a partial offset it is



Head of Great Northern Shrike.

also known to devour plant-lice and various caterpillars.

The snowbird or snow bunting is one of the most characteristic winter birds. It is a seed-eater, coming to us from the north with the winter snows.

The junco or black snowbird is a common winter resident or migrant in most of the eastern states, breeding in the northern tier of states and in Canada. Its principal food consists of the seeds of weeds, though in summer many insects are eaten.

The great northern shrike is one of the most picturesque of our winter

birds. "Appropriating to himself sufficient territory where no other bird may safely intrude, he becomes the terror of the neighborhood," writes Dr. Coues. "Woe to the unlucky finch or warbler that ventures to trespass on these hunting grounds. Like a veritable sentinel on guard, the shrike stands in wait upon his chosen spot, ready to pounce with unerring aim upon the first little bird that may dare to rustle in the nearest bush." Besides the small native birds that are thus destroyed, this shrike is known to attack the English sparrows, as well as shrews, mice, and many kinds of insects. This bird breeds in New England and northward, building a bulky nest in a tree or shrub, not far from the ground, in which it rears four to six young.

The titmice or chickadees which form the family *Paridae* are represented in North America by nearly a score of species and varieties, the great majority of which, however, are rare or only locally distributed. The common chickadee or black-capped titmouse is much the most familiar species in the eastern states, remaining with us throughout the year. It takes a great variety of food, gleaning through the winter from the bark and twigs of many sorts of trees, and in summer devouring insects of many kinds. In a cankerworm infested orchard sixty-one per cent. of the food of two specimens consisted of these caterpillars, while injurious beetles constituted the remainder.

In a recent investigation of the winter food of the chickadee the present writer studied the stomach contents of forty-one specimens taken

during November, December, January, February, and March. The results as a whole show that more than half of the food of the chickadee during the winter months consists of insects, a very large proportion* of these being taken in the form of eggs. About five per cent. of the stomach contents consisted of spiders or their eggs. Vegetation of various sorts made up a little less than a quarter of the food, two thirds of which, however, consisted of buds



The Chickadee or Black-Capped Titmouse.



Eggs of Aphides about buds of birch.

and bud scales that were believed to have been accidentally introduced along with plant-lice eggs. These eggs made up more than one fifth of the entire food, and formed the most remarkable element of the bill of fare. It seems to me evident that a large proportion of the bud scales are accidentally introduced into the stomachs of the birds, because most of the aphid eggs are taken from the crevices beside the buds of deciduous trees and shrubs; and so it must commonly happen that bud scales are pecked away and swallowed with the eggs.

This destruction of the myriad eggs of plant-lice that infest fruit, shade, and forest trees is probably the most important service which the chickadee renders during its winter residence. More than 450 eggs

sometimes occur as the food of one bird in a single day. On the supposition that one hundred were eaten daily by each of a flock of ten chickadees, there would be destroyed 1,000 a day or 100,000 during the days of winter, a number which I believe to be far below the real condition, could we determine it precisely.

Insect eggs of many other kinds were found in the food of the chickadees. Many of these it was impossible to recognize, but there was no difficulty in identifying the eggs of the common American Tent Caterpillar and the Fall Cankerworm. There were also present the eggs and egg sacs of many spiders of kinds commonly occurring under loose bark. While spiders as a class are doubtless beneficial creatures, the destruction of some of them is not, in my opinion, to be considered as detrimental to the usefulness of the chickadee. The larvæ of several different kinds of moths were also found. One of the most abundant species was believed to be the common apple worm, the larva of

the codling moth. The bark beetles of the family *Scolytidae*, which are destructive to forests all over our country, were also freely eaten by the chickadee, while the skins of sumac berries were eaten to a considerable extent. (A fuller record of the results will be found in Bulletin 54 of the New Hampshire College Experiment Station.)

The Nuthatches (*Sittidae*) comprise a small family of creeping birds which inhabit woodlands chiefly, although they often visit trees in orchards and groves, or along the highway. Most of their food consists of insects gathered from the bark of trees, but part of it is composed of nuts of various kinds. They are compact, flattened birds, with plumage of modest colors and hard, barbed, and pointed tongues. Four species and one variety occur in the United States, the commonest form in New England being the White-breasted Nuthatch, which in the Middle and Western states is replaced by a variety with a more slender bill. This bird is frequently abundant in woodlands and moves actively about over trunks and branches in search of food. Professor King examined the stomach contents of twenty-five Wisconsin specimens, finding that fourteen of them had eaten beetles, including elaters and longicorns, while others contained ants, caterpillars, and beetle grubs, a spider and chrysalid, a few small fungi, some acorns, and a little corn. Four Illinois specimens had eaten beetles of various kinds, some of them being lady-beetles. The nest of this bird is built in a hole in a tree, the cavity being sometimes excavated by the Nuthatch, and sometimes by another bird or a

falling limb. The rapid destruction of forests and the thinning out of dead trees in orchards and woodlands must reduce the available nesting sites and thus tend to lessen the numbers of Nuthatches. There is some reason for supposing that if suitable nesting sites were provided in orchards, these birds would breed in them. It is an experiment well worth trying.

The Brown Creeper is the common American representative of the small family of creepers (*Certhiidae*), of which only about a dozen species are known in the entire world. In habits and outward appearance these birds are suggestive of woodpeckers. They have rigid tail-feathers and a slender, decurved bill, with toes fitted for running up the sides of trees. The American species is a small bird, restless and active; it may often be seen running up tree trunks in a spiral direction, or hanging head downwards after the manner of nuthatches. It nests in holes in trees, and in most of the Northern states may be found throughout the year. Very few precise determinations of its food have been recorded; three stomachs examined by King contained small beetles and other insects, and Nelson reports that he has seen several of these creepers on the sides of a house searching for spiders. It seems probable that they take a great variety of such insects as they can find on the bark of trees.

The most abundant of our winter woodpeckers are the Hairy and the Downy species. The Hairy Woodpecker is a particularly useful bird, searching persistently for the wood-boring grubs that live beneath the

bark of trees. These birds visit freely the kings of the forest as well as the fruit trees of the orchard and the shade and ornamental trees of the home grounds, the park, and the public highway. During their meanderings over the trunk and larger branches, they often startle moths and other nocturnal insects, which they devour whenever possible. A good idea of the general

them. They also do good service in penetrating the cocoons of the Cecropia Emperor Moth, shown in the accompanying illustration, the larvæ of which devour the foliage of fruit and shade trees. A number of observers have reported that these birds push their beaks through the tough cocoon until the pupa inside is reached; the juices of the latter are extracted by the bird.



The Cecropia Moth and its Cocoon. (Reduced.)

diet of this species may be obtained from Professor King's statement that of twenty-one specimens examined, "Eleven had eaten fifty-two wood-boring larvæ; five, thirteen geometric caterpillars; ten, one hundred and five ants; six, ten beetles; two, two cockroaches; two, nine oötheca of cockroaches; two, two moths; one, a small snail; one, green corn; one, a wild cherry; and one, red elderberries." In the presence of an unusual abundance of grasshoppers, these birds feed freely upon

Mr. F. E. L. Beal of the United States department of agriculture has made a special study of the food of the hairy and downy woodpeckers. His results show that from two thirds to three fourths of their food consists of insects. Wood-boring larvæ and ants are the most important elements of their food.

The downy woodpecker may well be considered a miniature edition of his hairy cousin. It is more common than the latter in orchards and is often called the "sapsucker," but

this is a misnomer, as that name is only properly applied to the yellow-bellied woodpecker. Although the downy species bores holes in the bark of trees it does not revisit them to suck the sap according to the habit of the last-named bird, and the holes seem, not usually, to injure the tree. Seventeen Wisconsin specimens examined to determine their food, had eaten forty insect larvæ, including twenty wood-boring grubs, three caterpillars, seven ants, four beetles, a chrysalid, one hundred and ten small bugs, and a spider, together with a few acorns and small seeds, and a little woody fibre apparently taken by accident along with the grubs. Audubon states that in autumn these birds eat poke-berries and wild grapes.

The ruffed grouse or "partridge" is one of the most interesting of the birds that remain with us throughout the winter. Of its general food habits Dr. A. K. Fisher says: "The ruffed grouse is very fond of grasshoppers and crickets as an article of

diet, and when these insects are abundant it is rare to find a stomach or crop that does not contain their remains. One specimen, shot late in October, had the crop and stomach distended with the larvæ of *Edema albifrons*, a caterpillar which feeds extensively on the leaves of the oak. Beechnuts, chestnuts, and acorns, are also common articles of food. Among berries, early in the season, the blackberries, blueberries, raspberries, and elderberries are eaten with relish, while later in the year the wintergreen and partridge berry, with their foliage, sumach berries (including those of the poisonous species), cranberries, black alder, dogwood, nannyberries, and wild grapes form their chief diet. In the fall the foliage of plants often forms a large part of their food, that of clover, strawberry, buttercup, wintergreen, and partridge-berry predominating. In the winter these birds feed on the buds of trees, preferring those of the apple tree, iron-wood, black and white birch, and poplar."



A Family of Ruffed Grouse.

Photographed by F. R. Webster.

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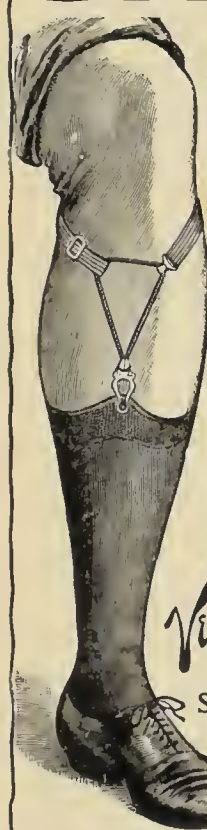


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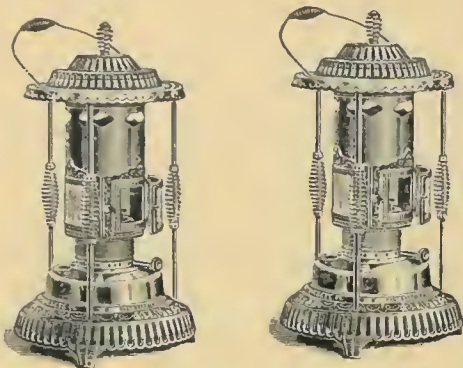
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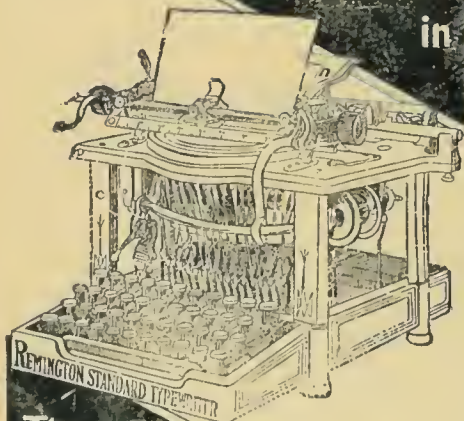
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